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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/530,180

04/04/2005

Go Nagaya

Q86875

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23373 7590 12/30/2009  
SUGHRUE MION, PLLC  
2100 PENNSYLVANIA AVENUE, N.W.  
SUITE 800  
WASHINGTON, DC 20037

EXAMINER

VANAMAN, FRANK BENNETT

ART UNIT

PAPER NUMBER

3618

NOTIFICATION DATE

DELIVERY MODE

12/30/2009

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

sughrue@sughrue.com  
PPROCESSING@SUGHRUE.COM  
USPTO@SUGHRUE.COM

<b>Office Action Summary</b>	<b>Application No.</b> 10/530,180	<b>Applicant(s)</b> NAGAYA, GO	
	<b>Examiner</b> Frank B. Vanaman	<b>Art Unit</b> 3618	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 05 October 2009.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)         | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)         | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                          |

***Reopening of Prosecution***

1. In view of the brief filed on October 5, 2009, PROSECUTION IS HEREBY REOPENED. Supplemental rejections and further references cited as evidence are set forth below.

To avoid abandonment of the application, appellant must exercise one of the following two options:

(1) file a reply under 37 CFR 1.111 (if this Office action is non-final) or a reply under 37 CFR 1.113 (if this Office action is final); or,

(2) initiate a new appeal by filing a notice of appeal under 37 CFR 41.31 followed by an appeal brief under 37 CFR 41.37. The previously paid notice of appeal fee and appeal brief fee can be applied to the new appeal. If, however, the appeal fees set forth in 37 CFR 41.20 have been increased since they were previously paid, then appellant must pay the difference between the increased fees and the amount previously paid.

A Supervisory Patent Examiner (SPE) has approved of reopening prosecution by signing below: /LESLEY D MORRIS/

Supervisory Patent Examiner, Art Unit 3611

***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Baker et al. (US 3,472,331) in view of Iizuka et al. (US 5,224,563). Baker et al. teach an arrangement for the driving of a steerable wheel (42) including a first knuckle (proximate 122) which does not turn and is locked in a steering direction (e.g., at least through the connection at 124, 132, 134), and which is connected to an upper suspension arm (22), a lower suspension arm (24) and to a non-rotating vehicle portion and which supports,

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in a non-steered configuration, a drive assembly (12, 16), a second knuckle (19, 21, 82, 85) which is steerable, pivotally mounted with respect to the first knuckle about a king pin axis (Y), the arrangement additionally fitted with a braking arrangement (56, 58), wherein drive force is provided to the wheel hub through a mechanical arrangement including a flexible constant velocity joint (26) having a center (C) along the king pin axis (Y) and including two direct moving portions (e.g., 20 and 28) connected to one another by a pair of joint portions (orthogonal to one another) such that the axes of movement intersect at the center (C). The reference to Baker et al. fails to teach the drive source as comprising a motor. Iizuka et al. teach that it is well known to provide the steerable wheels of a vehicle (23, see top of figure 5) with drive motors. It would have been obvious to one of ordinary skill in the art at the time of the invention to provide a motor drive as taught by Iizuka et al. for driving the wheels of the vehicle taught by Baker et al. with the non-moving portion of the motor connected to the non-steered portion of the vehicle frame (as also suggested by Iizuka et al.), for the purpose of reducing or eliminating emissions in city driving scenarios.

As regards the provision of a steering rod for rotating the steerable portions with respect to the non-steerable portions, in that (a) Baker et al. teach an arrangement for a steerable wheel and (b) it is very well known in the vehicle arts to connect a steering rod to a pivoting wheel support to allow the wheel to be steered, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide a steering rod connected a steerable portion (and as such to the second knuckle portion, as broadly claimed) in order to allow the wheel to be steered.

Note that the modifying reference to Iizuka (see figure 5) teaches the use of a steering linkage (27) which connects to the turnable or steerable portions of the wheel mounts (e.g., outboard of the universal joints 26).

4. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Baker et al. (US 3,472,331) in view of Iizuka et al. (US 5,224,563) and Tenney (US 1,780,870). Baker et al. teach an arrangement for the driving of a steerable wheel (42) including a first knuckle (proximate 122) which does not turn and is locked in a steering direction

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(e.g., at least through the connection at 124, 132, 134), and which is connected to an upper suspension arm (22), a lower suspension arm (24) and to a non-rotating vehicle portion and which supports, in a non-steered configuration, a drive assembly (12, 16), a second knuckle (19, 21, 82, 85) which is steerable, pivotally mounted with respect to the first knuckle about a king pin axis (Y), the arrangement additionally fitted with a braking arrangement (56, 58), wherein drive force is provided to the wheel hub through a mechanical arrangement including a flexible constant velocity joint (26) having a center (C) along the king pin axis (Y) and including two direct moving portions (e.g., 20 and 28) connected to one another by a pair of joint portions (orthogonal to one another) such that the axes of movement intersect at the center (C). The reference to Baker et al. fails to teach the drive source as comprising a motor. Iizuka et al. teach that it is well known to provide the steerable wheels of a vehicle (23, see top of figure 5) with drive motors. It would have been obvious to one of ordinary skill in the art at the time of the invention to provide a motor drive as taught by Iizuka et al. for driving the wheels of the vehicle taught by Baker et al. with the non-moving portion of the motor connected to the non-steered portion of the vehicle frame (as also suggested by Iizuka et al.), for the purpose of reducing or eliminating emissions in city driving scenarios. The combined references to Baker et al. and Iizuka et al., while both explicitly teaching wheel arrangements which are steerable and are driven from a source which does not rotate with the steering, fail to explicitly teach a rod connected to a portion of the knuckle which pivots in a steering direction. Tenney teaches that it is very old and very well known to actuate a steered wheel (43) with a rod (72) which is connected to an arm (40) connected to the pivoting portion of the wheel mount, which pivoting portion is connected with the pivoting portions of at least two knuckle assemblies (26, 28, 30) through at least the portions of the steered wheel assembly connecting the arm 40 with the pivoting portions of the knuckle assemblies. It would have been obvious to one of ordinary skill in the art at the time of the invention to provide a steering rod as is very old and very well known, to connect the pivoting steered portion of the wheel assembly (and thus the turnable portions of the knuckle arrangements) of the drive of Baker et al. as modified by Iizuka et al. for the very old and well known purpose of ensuring that the wheel can actually be

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steered. Since both the wheels of Baker et al. and Iizuka et al. are explicitly disclosed as being steerable, and in that the use of a connecting rod is exceptionally old and well known, such a combination beneficially makes use of well known and well established technologies to perform this operation, allowing the invention to be achieved using commonly known and available parts.

5. Claims 2-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Baker et al. in view of Iizuka et al. and Nelson (US 3,468,389). The references to Baker et al. and Iizuka et al. are discussed above and fail to teach the connection of the motor to the non-steered knuckle portion by an elastic body or damper, and 'direct-moving guides' in vertical and horizontal directions. Nelson teaches an old and well known arrangement for mounting a motor in a vehicle drive arrangement, wherein a motor (12) is mounted to non-steered portions of a vehicle (e.g., 62, 67) with plural resilient bushing elements (44, 46) and direct moving guide portions (50) being separately oriented in horizontal (58) and vertical (52) orientations and being provided with further resilient buffer members (36, 36, 37, 37). It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the mounting of the motor drive connected to the non-steered vehicle portions (and thus to the non-steered knuckle portion) of the vehicle of Baker et al. as modified by Iizuka et al. with the resilient and direct moving buffer and guide arrangement taught by Nelson, for the purpose of isolating the motor and frame so as to absorb torque reaction of the motor and cushion the motor from shocks and vibrations generated in the drive axle.

As regards claims 5 and 6, while the references to Baker and Iizuka teach universal joints (which may function as constant velocity joints for low angular values between input and output), the references do not explicitly teach the joints to be constant velocity joints. It is well known, however to employ a constant velocity joint in place of a universal joint for the well known purpose of keeping the incremental input and output velocities as close to one another as possible (rather than only the average velocity summed over a whole rotation as may be had with a universal joint).

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6. Claims 2-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Baker et al. in view of Iizuka et al., Tenney and Nelson (US 3,468,389). The references to Baker et al., Iizuka et al. and Tenney are discussed above and fail to teach the connection of the motor to the non-steered knuckle portion by an elastic body or damper, and 'direct-moving guides' in vertical and horizontal directions. Nelson teaches an old and well known arrangement for mounting a motor in a vehicle drive arrangement, wherein a motor (12) is mounted to non-steered portions of a vehicle (e.g., 62, 67) with plural resilient bushing elements (44, 46) and direct moving guide portions (50) being separately oriented in horizontal (58) and vertical (52) orientations and being provided with further resilient buffer members (36, 36, 37, 37). It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the mounting of the motor drive connected to the non-steered vehicle portions (and thus to the non-steered knuckle portion) of the vehicle of Baker et al. as modified by Iizuka et al. and Tenney with the resilient and direct moving buffer and guide arrangement taught by Nelson, for the purpose of isolating the motor and frame so as to absorb torque reaction of the motor and cushion the motor from shocks and vibrations generated in the drive axle.

As regards claims 5 and 6, while the references to Baker et al., Tenney and Iizuka et al. all teach universal joints (which may function as constant velocity joints for low angular values between input and output), the references do not explicitly teach the joints to be constant velocity joints. It is well known, however to employ a constant velocity joint in place of a universal joint for the well known purpose of keeping the incremental input and output velocities as close to one another as possible (rather than only the average velocity summed over a whole rotation as may be had with a universal joint).

### ***Response to Comments***

7. Applicant's comments, filed in the brief, have been carefully considered. The examiner notes that a number of applicant's quotations of the previous office actions refer to "appellant". The previous office actions do not include the term 'appellant' anywhere in their respective contents, and as such, it appears that applicant has

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actually modified the contents of the quotations, whilst still apparently asserting that they are taken from the office actions. At best, this is in error and may reasonably cast doubt as to the correctness of the remainder of the content of the quotations. Applicant is explicitly invited to show where in the previous office actions the term "appellant" has been used. Care should be taken to ensure that the content of others' work is not misrepresented.

Initially as regards the assertion that the references as applied do not teach an in-wheel motor, the examiner notes that applicant's claim recites an "in wheel motor system" (lines 1 of each of claims 1-6), and fails to further specify an actual location for the motor as being 'in-wheel'. As such, in that portions of the system taught by the references of Baker et al., and Iizuka et al. are within the wheel, the system may be reasonably deemed an "in-wheel system" as is actually claimed, at least for the reason that a number of the components are located within the wheel. Further the embodiment which appears to be claimed (i.e., that embodiment having a motor-to-wheel drive which explicitly includes the connection called out as a constant velocity joint (e.g., element 22, applicant's figure 1), the motor is not contained within the wheel, and as such, the arrangement taught by Baker et al. as modified by Iizuka et al. constitutes an "in-wheel" system at least as much as that version as applicant has disclosed at figure 1.

While applicant has argued limitations to a degree more specific than what is actually positively recited in the claims, note that while the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

*As regards reading unclaimed limitations from the specification into the claims*

From MPEP 2111:

During patent examination, the pending claims must be given their broadest reasonable interpretation consistent with the specification. *In re Hyatt*, 211 F.3d 1367, 1372, 54 USPQ2d 1664, 1667 (Fed. Cir. 2000). Applicant always has the opportunity to amend the claims during prosecution, and broad interpretation by the examiner reduces the possibility that the claim, once issued, will be interpreted more broadly than is justified. *In re Prater*, 415 F.2d 1393, 1404-05, 162 USPQ 541, 550-51 (CCPA 1969) The court



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explained that "reading a claim in light of the specification, to thereby interpret limitations explicitly recited in the claim, is a quite different thing from 'reading limitations of the specification into a claim,' to thereby narrow the scope of the claim by implicitly adding disclosed limitations which have no express basis in the claim." The court found that applicant was advocating the latter, i.e., the impermissible importation of subject matter from the specification into the claim.). See also *In re Morris*, 127 F.3d 1048, 1054-55, 44 USPQ2d 1023, 1027-28 (Fed. Cir. 1997).

As regards the connection of a steering rod to a turnable part of the wheel mount, initially, the examiner notes that connecting a steering rod to a non-turnable part of the wheel mount would be very well understood to not actually achieve any steering actuation, and rather it would be well understood that the rod would be connected to a portion that turns, at least for the rather well known purpose of ensuring that the steering linkage actually works. Further, Tenney teaches that it is very old and very well known to connect a steering rod to a turnable wheel portion (which would be connected through at least any intervening elements, to a turnable knuckle portion. Tenney is applied in combination with Baker et al. and Iizuka et al., in an alternate rejection, although the examiner suggests that this function is so well known as to not require the reference to be explicitly applied. As such Tenney may also serve as a showing of evidence that one of ordinary skill in the art would be very well acquainted with the manner of connecting a steering rod to a turnable portion of a wheel assembly. Note that the examiner has additionally cited a number of other references which also teach that this is indeed a very old and very well known feature in the automotive arts.

As regards the relationship between a motor mounted so as not to turn with the pivoting of the wheel, and the knuckle portion which is also taught not to turn with the pivoting of the wheel, please note that the relationship of two elements which are connected to the vehicle and are taught to not turn with the pivoting of the wheel would be fixed with respect to each other and connected, to the breadth this limitation is actually claimed, through any intervening elements. As regards the reference to Baker et al., the examiner notes that the knuckle elements may be divided into numerous portions, each of which either being pivotable with the wheel, or not pivotable with the

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wheel. Note that portions 122, 124, 132, 134 do not pivot, and are connected with a non-pivoting upper arm (24) which is connected to the remainder of the vehicle and thus to any other element mounted thereon such as a drive source. Elements 19, 21, 82, 85 are pivotally connected to the non-pivoting portions, and thus reasonably constitute another part which can pivot for steering.

As regards the presence of a universal joint, see Baker et al. at col. 3, line 20 and Iizuka et al. at col. 5, lines 1-2. For small angles universal joints and constant velocity joints are identical in operation. Note additionally that it has been asserted that it would be well within the skill of the ordinary practitioner to substitute a constant velocity joint (see, as evidence, the reference to Miki et al.) and further that the term 'universal joint' is explicitly applied in conjunction with a device which is actually a constant velocity joint (see, as evidence, the references to Wahlmark, Mazziotti, and Kudo et al.) and which provide implicit evidence that universal joints and constant velocity joints may be interchangeably described, and that a constant velocity joint may be reasonably substituted for a universal joint.

### ***Conclusion***

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Herreshoff (2,635,704) teach that it is very well known to use a rod (280, 282) to connect to a turnable part (2689, 270, 272) which is connected with a turnable part of a knuckle (37') to allow wheel steering, as does Hewko et al. (US 5,087,229); Edwards (US 3,347,333) teach that it is well known to locate a motor 'in' a wheel and connect it to drive the wheel through a constant velocity joint, Miki et al. (US 4,504,099) teach that the use of a constant velocity joint is very well known in automotive drive scenarios, Wahlmark (US 3,818,721) Mazziotti (US 4,541,819) and Kudo et al. (US 5,791,995) all teach that devices which are generically called "universal joints" may indeed have the characteristic of being constant velocity joints.

9. Any inquiry specifically concerning this communication or earlier communications from the examiner should be directed to F. Vanaman whose telephone number is 571-272-6701.

Any inquiries of a general nature or relating to the status of this application may be made through either Private PAIR or Public PAIR. Status information for

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unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A response to this action should be mailed to:

Mail Stop \_\_\_\_\_  
Commissioner for Patents  
P. O. Box 1450  
Alexandria, VA 22313-1450,

Or faxed to:

PTO Central Fax: 571-273-8300

**F. VANAMAN**  
**Primary Examiner**  
**Art Unit 3618**

/Frank B Vanaman/  
Primary Examiner, Art Unit 3618